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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/684,103	10/05/2000	Douglas U. Mennie	47171-00271	3137
41230 7590 12/28/2007 CUMMINS-ALLISON CORP. C/O NIXON PEABODY LLP 161 N. CLARK ST., 48TH FLOOR CHICAGO, IL 60601			EXAMINER SHAPIRO, JEFFERY A	
			ART UNIT 3653	PAPER NUMBER
			MAIL DATE 12/28/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

09/684,103

Applicant(s)

MENNIE ET AL.

Examiner

Jeffrey A. Shapiro

Art Unit

3653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-29, 78-89 and 146-168 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-29, 78-89 and 146-168 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/30/07.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 7-12, 14-29, 78-89, and 146-168 are rejected under 35 U.S.C. 103(a) as being unpatentable over McInerny (US 5,761,089) in view of Crane et al (US 5,151,607) and further in view of Brady et al (US 5,543,988).

et al (US 6,118,623) and still further in view of Green et al (US 6,353,317 B1).

McInerny discloses a high-speed currency bill evaluation device (10) that receives a stack of bills in hopper/input receptacle (12), an output receptacle (20 and 68) that receives bills after processing, a transport mechanism as shown in figure 2a, a magnetic scanhead (86), adjacent to a transport path, a cpu processor (302), rom and ram memories (318, 319), and optical sensors (80, 82, 84). McInerny also discloses comparing sampled data with stored master data, the cpu processor then determining based upon set threshold values whether the bill is authentic or not. See col. 23, lines 23-34, for example. McInerny further discloses handling multiple currencies from other countries as well as other documents such as food stamps. See col. 1, lines 29-40.

McInerny discloses, as described in Claim 9, that the scanhead is disposed transverse to the document transport path. See figure 4.

McInerny also discloses, as described in Claim 12, that the bills are transported so that a long edge of the bill is the leading edge of the bill.

McInerny does not expressly disclose, but Crane discloses that currency bills contain embedded magnetic security threads, and that both optical and metal/magnetic detectors are used to determine presence and location of a security thread. See Crane, col. 1, lines 22-55, col. 2, lines 1-15 and col. 4, line 43-col. 5, line 60. Note also that Crane in col. 1, lines 29-33 states that position of the "metallized thread" corresponds to denomination in U.S. currency.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have used both a magnetic detector and an optical sensor and associated circuitry, as taught by Crane, to determine presence of a security thread as well as its position on bills processed by McInerny's bill processing device.

The suggestion/motivation to do so would have been to prevent counterfeiting of bills. See Crane, col. 1, lines 29-39.

McInerny does not expressly disclose, but Brady discloses a magnetic scanhead (146), as illustrated in figure 7 and at col. 5, lines 34-55, that comprises several closely spaced magnetic sensors (151-156). Brady's semiconductor substrate (158) is mentioned at col. 6, lines 50-55 as having one-thousand (1000) magnetic field sensors, i.e., Hall sensors (151-156). Each sensor is illustrated at figure 1 and discussed at col. 2, lines 29-67 as having dimensions on the order of angstroms and micrometers. Thus, the distance between each hall sensor (151-157) is less than .5 mm.

Regarding Claims 152, 155, 158, 160, 164 and 168, note that hall-effect magnetic sensors are magnetic field sensors which are functional equivalent to magnetoresistive sensors.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have used Brady's scanhead comprised of several closely spaced Hall effect sensors in place of McInerny's scanhead, for the purpose of obtaining higher resolution.

The suggestion/motivation for doing so would have been to detect security threads of varying widths and lengths. Again, note also that Brady discloses that the read resolution of the magnetic read head is dependent upon the spacing between the first and second shield layers. Again, this spacing is on the order of angstroms, as is well-known in the field of thin-film processing.

In light of the teaching of Crane that U.S. currency contains metallized security threads whose position correspond to a particular denomination, and that optical and magnetic detectors are used in conjunction with each other to determine currency denomination and authenticity based in part on the detection of the security thread and its position on the bill, it would have been obvious to one of ordinary skill in the art to have used appropriate optical and magnetic detectors and algorithms and circuitry in McInerny's bill processing device to determine presence and position of a security thread within a currency bill.

It further would have been obvious based on Fatula's teaching, that using a magnetic read head with several magnetoresistive (MR) sensors in Cranes magnetic

head would have provided an improved read resolution for reading various threads found in bills.

Further regarding Claims 10, 11, 17, 18, 26, 27, 81-87, 147, 149-151, 153-154, 156, 157, 159, 161-163, and 165-167, it would have been obvious as a matter of design choice to have established the spacing anywhere between 5mm or less based upon the required detection accuracy required. Brady provides the motivation and teaching to use closely spaced magnetic detectors so as to better detect both course and fine magnetic patterns. The closeness of the hall effect sensors directly relates to the resolution one ordinarily skilled would be able to obtain in order to detect subtle magnetic differences in signals of varying features. Note also that one ordinarily skilled would also balance the resolution required with the bill's required travel speed.

3. Claims 13, 20, 29 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNerny (US 5,761,089) in view of Crane et al (US 5,151,607), further in view of Brady and still further in view of Winkler (US 5,394,992).

McNerny discloses the bill processing apparatus described above. McNerny does not expressly disclose, but Winkler discloses running a bank note sorting device at various speeds. See Winkler, col. 1, lines 31, 32, col. 5, lines 53-68 and col. 6, lines 1-25, in which it is stated that speeds of up to 2000 documents per minute are achieved.

At the time of the invention, it would have been logical for one ordinarily skilled in the art to have caused the device of McNerny to run at various speeds up to 2000 documents per minute, since McNerny discloses a device capable of high-speed

operation at col. 1, lines 40-45. Therefore, one ordinarily skilled in the art would have been motivated to run McInerny's device at an optimal speed, such as 800 or more documents per minute, that would produce the best throughput of bills under the particular processing conditions that batch of bills would require.

***Response to Arguments***

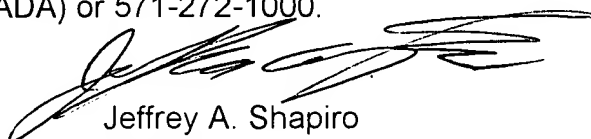
4. Applicant's arguments with respect to Claims 7-29, 78-89, and 146-168 have been considered but are moot in view of the new ground(s) of rejection.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey A. Shapiro whose telephone number is (571)272-6943. The examiner can normally be reached on Monday-Friday, 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick H. Mackey can be reached on (571)272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3653

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Jeffrey A. Shapiro', is written over the printed name.

Jeffrey A. Shapiro  
Examiner  
Art Unit 3653

December 26, 2007